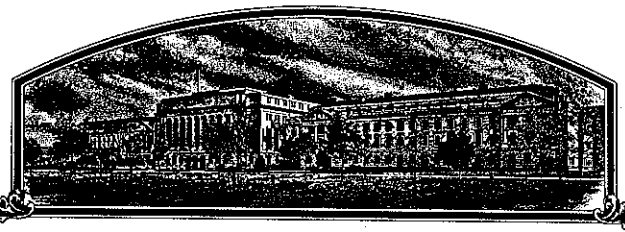

No. 8300162

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Nickerson American Plant Breeders, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT ETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'HR 53'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of March in the year of our Lord one thousand nine hundred and eighty-six.

Attest:

Kenneth [illegible]s

Commissioner

Plant Variety Protection Office

Agricultural Marketing Service

Richard E. Lyng

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
HW77-355A & NAPB 203	HR 53	PV NUMBER 8300162

2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE	TIME
Hard Red Winter Wheat	Triticum aestivum	7/28/83	8:30 A.M. XXX P.M. XXX

4. FAMILY NAME (BOTANICAL)	5. DATE OF DETERMINATION	FEE RECEIVED	DATE
Gramineae	1=Sept. 1979 2=Sept. 1980	$ 1,000 $	7/28/83

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
NICKERSON ~~North~~ American Plant Breeders, Inc.	5201 Johnson Dr., P.O. Box 2955 Mission, KS	913-384-4940 KS 303-532-3721 CO

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Delaware, January 19, 1983	January 19, 1983

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

R.E. HEINER
~~G.E. Dixon~~
P.O. Box 2955 Mission, KS 66201

ROBERT F. BRUNS
~~R.E. Heiner~~ or C. Bruns
P.O. Box 30 Berthoud, CO 80513

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.
- [X] 13E. Exhibit E., Quality Data

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[XX] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

May 18, 1983 (DATE) — Robert E Heiner (SIGNATURE OF APPLICANT)

May 31 1983 (DATE) — (SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

RECEIVED MAY 2 0 1983

1

8300162

Exhibit A

Origin and Breeding History of HR 53

PEDIGREE: II18889/Trapper//C0652643/3/Sonora/Trapper//Warrior

DATE OF CROSS: 1973

HISTORY: The ~~breeding history of~~ HR 53 started in 1973 with the cross of C0701411 (F_6) with C0695461 (F_6). This F_1 was increased in 1974, and grown as an F_2 population in 1975. Single rows of F_3 lines were grown in 1976 at 3 locations. One of these lines was advanced to yield trials in 1977. This line was given the testing designation HW77-355. In 1979, 300 head-rows were grown in Berthoud, Colorado for purification purposes. There were two distinctly different plant colors in this population. The majority type was a steel blue-green color and the minority was a dark green. Nineteen of the blue-green types were selected and bulked together to form HW77-355A. This bulk was put directly into full regional yield testing. In 1980, 100 head-rows were grown. Bulked seed of these head-rows was planted on two acres in 1981. This represents the original Breeder seed increase. In 1981, the HW77-355A designation was changed to NAPB 203 and it was put into full regional USDA testing. In 1982, NAPB 203 was ~~purchased by Garst Seed Co. and~~ given its final variety designation of HR 53.

HR 53 is uniform and stable. Less than 1% of the plants were rogued from the Foundation fields in 1982. Approximately 90% of these rogued plants were three to twelve centimeters taller than HR 53. Less than 1% of these taller plants may be encountered in subsequent generations.

2

EXHIBIT B

Novelty Statement

HR 53 is most similar to the hard red winter wheat Vona. However, it can be distinguished by the following morphological characteristics.

- HR 53 is a distinct blue-green color at boot stage. Vona is a green plant color at boot stage.
- HR 53 does express hairs on the last rachis of the internode. Vona does not express hairs on the last rachis internode.
- HR 53 has auricle hairs and expresses auricle anthocyanin. Vona does not have auricle hairs and does not express auricle anthocyanin.
- HR 53 has a twisted flag leaf. Vona is patented as having a non-twisted flag leaf.
- HR 53 has medium length hairs on the brush of the seed, Vona is patented as having short length brush hairs on the seed.
- HR 53 has a narrow seed crease. Vona is patented as having a wide seed crease.
- HR 53 and Vona differ significantly in glume length; (see A.N.O.V.A. Table).

The test was done for glume length of HR53 (variety 1) vs.VONA (variety 2).

A.N.O.V.A. TABLE FOR GLUME LENGTH

SOURCE	DF	SS	MS
TOTAL	49	2.282	
VAR	1	2.465	2.465**
ERROR	48	5.818	0.121

F-TEST= 20.334**

MEANS FOR EACH VARIETY
VARIETY 1 MEAN: 7.22
VARIETY 2 MEAN: 7.66

THE PROBABLITY THAT THE DIFFERENCE IN MEANS OF GLUME LENGTH ARE SIGNIFICANTLY DIFFERENT AT THE 1% ALPHA LEVEL.

HR 53

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)
NICKERSON
~~North~~ American Plant Breeders, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)
5201 Johnson Drive, P.O. Box 2955
Mission, KS 66201

FOR OFFICIAL USE ONLY
PVPO NUMBER 8300162
VARIETY NAME OR TEMPORARY DESIGNATION
HR 53

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (Specify) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][3][3] FIRST FLOWERING [2][3][9] LAST FLOWERING

4. MATURITY (50% Flowering):
[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[0][1] NO. OF DAYS *LATER* THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):
[0][8][8] CM. HIGH
[ ][ ] CM. TALLER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[1][7] CM. SHORTER THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):
[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][4] NO. OF NODES (Originating from node above ground)
[1][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[2] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][2] MM. LEAF WIDTH (First leaf below flag leaf)
[1][8] CM. LEAF LENGTH (First leaf below flag leaf):

8300162

HR 53

FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=Middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[7.3] CM. LENGTH [9.7] MM. WIDTH

12. GLUMES AT MATURITY:

[1] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE ave. 5.5 mm

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT (slight)

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[06] MM. LENGTH [3.3] MM. WIDTH [32] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderate resistance 4=Moderately susceptible

[3] STEM RUST (Races) 15 & 151

[4] LEAF RUST (Races) Field Races

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Soil Borne Mosaic Virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderate resistance 4=Moderately susceptible

[0] SAWFLY

[0] APHID (Bydv.)

[1] GREEN BUG

[0] CEREAL LEAF BEETLE

[0] OTHER (Specify) _____

HESSIAN FLY RACES: [3] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Vona	Seed size	Vona
Leaf size	Vona	Seed shape	Vona
Leaf color	Vona	Coleoptile elongation	Vona
Leaf carriage	Vona	Seedling pigmentation	Vona

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

6

Exhibit D

Additional Description of HR 53

HR 53 is a hard red winter wheat tested as HW77-355A and NAPB 203. It was bred and developed by North American Plant Breeders Inc..

HR 53 is an intermediate height semidwarf variety with exceptionally strong straw strength characteristics, intermediate maturity and moderate winterhardiness. Milling and baking properties are good.

Juvenile plant growth habit is semi-erect. Plant color is blue-green with an erect, twisted flag leaf. Head shape is tapering to strap, middense, awned and head color is white at maturity. Glumes are short in length and of medium width with oblique shoulders and acuminate beaks. Seed shape is ovate with rounded cheeks.

HR 53 is adapted to the irrigated acres of Kansas, Colorado and southern Nebraska, plus the continuous crop wheat areas of central Kansas and Oklahoma.

YEAR: 1982

North American Plant Breeders

HARD RED WINTER WHEAT QUALITY

YEAR	SAMPLE NAME	LOC	WHEAT--FLOUR QUALITY: TEST WT.	WHT PROT	FLR YLD	FLR PROT	FLR ASH	MIX CURVE	BAKING QUALITY: ABS.	MIX TIME	DOUGH CHAR	LOAF VOL	CRUMB GRN	CRUMB TEX	CRUMB COL	MILL SCORE	BAKE SCORE	TOTAL SCORE
			lb/Bu	14%mb	%	14%mb	14%mb	R	%	min	R	cc	R	R	R			
80	HW77-355A	CK	59.4	11.2	72.9	10.2	0.423	6	58.0	7.0	8	810	7	7	9	72-C	60-D	132-D
81	NAPB 203	SO	60.3	13.0	70.5	11.7	0.476	7	64.0	3.5	9	950	7	9	9	85-B	92-A	177-B
81	NAPB 203	LK	54.9	14.3	70.9	13.4	0.457	8	63.0	3.5	9	975	8	8	9	81-B	90-A	171-B
81	NAPB 203	HN	59.5	11.7	73.3	11.1	0.404	5	59.0	3.5	8	920	8	9	9	75-C	81-B	156-C
81	NAPB 203	BR	59.9	12.4	71.6	11.2	0.461	5	60.0	2.8	9	830	9	8	9	75-C	77-C	152-C
82	NAPB 203	EO	50.7	13.6	67.3	12.2	0.403	6	63.0	4.5	8	925	7	9	9	67-D	87-B	154-C
82	NAPB 203	LK	58.4	13.3	70.4	12.0	0.475	6	62.0	3.8	9	875	8	8	8	81-B	84-B	165-B
82	NAPB 203	CK	55.1	12.8	72.6	11.5	0.427	6	62.0	4.0	9	850	7	9	9	76-C	85-B	161-B
	AVERAGE		57.3	12.8	71.2	11.7	0.441	6	61.4	4.1	9	892	8	8	9	77-C	83-B	160-B
80	NEWTON	CK	59.8	12.3	70.9	11.3	0.456	8	62.0	5.0	8	895	7	7	9	81-B	80-B	161-B
81	NEWTON	SO	61.8	12.1	71.9	11.5	0.440	7	61.0	3.0	8	870	7	8	9	83-B	79-C	162-B
81	NEWTON	LK	56.8	13.5	69.8	12.3	0.449	7	62.0	3.0	9	1000+	8	9	9	78-C	90-A	168-B
81	NEWTON	HN	59.9	11.5	70.4	10.5	0.339	6	59.0	3.5	8	875	8	8	9	72-C	78-C	150-C
81	NEWTON	BR	62.0	12.5	73.4	12.0	0.386	5	63.0	2.0	8	810	7	8	9	83-B	77-C	160-B
82	NEWTON	EO	48.3	13.6	63.3	12.8	0.376	7	64.0	3.8	8	1000	7	8	9	68-D	92-A	160-B
82	NEWTON	LK	59.9	12.1	69.8	10.9	0.357	6	62.0	4.0	9	750	7	7	8	72-C	78-C	150-C
82	NEWTON	CK	56.2	11.5	70.3	10.1	0.397	5	60.0	4.3	9	830	8	9	9	63-D	81-B	144-C
	AVERAGE		58.1	12.4	70.0	11.4	0.400	6	61.6	3.6	8	885	7	8	9	74-C	81-B	155-C

GRADES: A-EXCELLENT B-GOOD C-ACCEPTABLE D-QUESTIONABLE F-UNACCEPTABLE

R=RATINGS: 9-10=EXCELLENT 8=GOOD 7=ACCEPTABLE 5-6=QUESTIONABLE 1-4=UNACCEPTABLE

8300162